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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/829,355	04/09/2001	Varadarajan Srinivasan	P191/WLP	1055

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EXAMINER

KIM, HONG CHONG

ART UNIT

PAPER NUMBER

2186

DATE MAILED: 01/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/829,355

Applicant(s)

SRINIVASAN ET AL.

Examiner

Hong C Kim

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 April 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 16-26, 29-32, 36, 39-43, 48-51 and 57 is/are rejected.
- 7) ☒ Claim(s) 7-15, 27-28, 33-35, 37, 38, 44-47 and 52-56 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **Detailed Action**

1. Claims 1-57 are presented for examination. This office action is in response to the application filed on 4/9/01.
2. Receipt is acknowledged of information disclosure statement filed on 5/10/02, which the statement has been placed of record in the file. Information disclosed and listed on PTO 1449 was considered.

### ***Claim Objections***

3. Claim 43 is objected to because of the following informalities: It appears that "claim 39" should be changed to --claim 42-- for clarity. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claims 1-6, 16-19, 21, 29-32, 36, 39-43, 49-51, and 57 are rejected under 35 U.S.C. 102(e) as being anticipated by Feldmeier et al. (Feldmeier) US Patent No. 6,289,414.

As to claim 1, Feldmeier discloses the invention as claimed. Feldmeier discloses a CAM system including an array of binary CAM cells segmented into a plurality of array groups (col. 8 lines 20+), each array group having a group global mask for storing a mask pattern indicating priority of the array group (Figs. 3, 9, and 24).

As to claim 2, Feldmeier further discloses wherein two or more array groups have the same priority (Fig. 3).

As to claim 3, Feldmeier further discloses a CIDR address (col. 6 lines 9+ and col. 9 lines 8-27).

As to claim 4, Feldmeier further discloses an index of the longest prefix (col. 6 lines 9+ and col. 9 lines 8-27).

As to claim 5, Feldmeier further discloses means for storing data in the array groups according to prefix (col. 6 lines 9+ and col. 9 lines 8-27 and Figs. 7-9).

As to claim 6, Feldmeier further discloses means for selectively comparing a search key

with data stored in the array groups according to priority (Figs. 3 and 24).

As to claim 16, Feldmeier further discloses means for storing data in the array groups according to prefix (col. 6 lines 9+ and col. 9 lines 8-27 and Figs. 7-9).

As to claim 17, Feldmeier further discloses a next free address (col. 9 lines 25-27).

As to claim 18, Feldmeier further discloses an address decoder (Fig. 2 Step 2).

As to claim 19, Feldmeier further discloses an NFA table (col. 9 lines 25-27).

As to claim 21, Feldmeier further discloses an index circuit to generate a next free address (col. 9 lines 25-27).

As to claim 29, Feldmeier discloses the invention as claimed. Feldmeier discloses a CAM system including an array of binary CAM cells segmented into a plurality of array groups (col. 8 lines 20+), each array group assigned a priority, and a table having a plurality of rows, each storing the priority of a corresponding array group (Figs. 3, 9, and 24).

As to claim 30, Feldmeier further discloses wherein two or more array groups have the

same priority (Fig. 3).

As to claim 31, Feldmeier further discloses each array group includes a group global register for storing a global mask pattern indicative of the priority of the array group (Figs. 3, 9, and 24).

As to claim 32, Feldmeier further discloses means for selectively storing a search key with data stored in the array groups according to priority to generate a highest priority match index (Fig. 5).

As to claim 36, Feldmeier further discloses means for comparing a search key with data storing the array groups according to priority (Figs. 3, 9, & 24).

As to claim 39, Feldmeier discloses the invention as claimed. Feldmeier discloses a method of operating a CAM system including an array of binary CAM cells segmented into a plurality of array groups (col. 8 lines 20+) comprising, assigning a priority to one or more array groups (Figs. 3, 9, and 24) and selecting storing data in the array groups according to priority (Figs. 3, 9, and 24).

As to claim 40, Feldmeier further discloses wherein two or more array groups have the

same priority (Fig. 3).

As to claim 41, Feldmeier further discloses a mask pattern (Figs. 3, 9, and 24).

As to claim 42, Feldmeier further discloses a next free address (col. 9 lines 25-27).

As to claim 43, Feldmeier further discloses generating an NFA for each priority, storing the NFA, selecting a row of the NFA table using the priority, accessing the NFA (col. 9 lines 25-27 and Figs. 3, 9, and 24).

As to claim 49, Feldmeier further discloses a CIDR address (col. 6 lines 9+ and col. 9 lines 8-27).

As to claim 50, Feldmeier further discloses an index of the longest prefix (col. 6 lines 9+ and col. 9 lines 8-27).

As to claim 51, Feldmeier further discloses selectively comparing a search key with data stored in the array groups according to priority (Figs. 3 and 24).

As to claim 57, Feldmeier further discloses storing the priority for each array group in a

priority table (Figs. 3 and 24).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 20, 22-26, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldmeier et al. (Feldmeier) US Patent No. 6,289,414 in view of Chuang et al. (Chuang) US Patent No. 4,928,260.

As to claim 20, Feldmeier discloses the invention as claimed, however, Feldmeier does not specifically disclose an empty bit. However, it is well known in the memory art to use an empty bit. For example, Chuang discloses an empty bit (fig. 2-1 Ref. 24) for the purpose providing fast identification of the array status thereby increasing the system speed.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate an empty bit of Chuang in the teaching of Feldmeier thereby results in an invention as claimed.

As to claim 22, Feldmeier and Chuang disclose the invention as claimed. Chuang further



discloses valid bits (Fig. 2-1 Ref. 24) and a priority encoder (Fig. 2-2 Ref. 21).

As to claim 23, Feldmeier and Chuang disclose the invention as claimed. Chuang further discloses the select circuit includes means for selectively forcing the qualified valid bits to a mismatch (Fig. 2-1 Refs. 22, 24, & 41).

As to claim 24, Feldmeier and Chuang disclose the invention as claimed. Chuang further discloses the select circuit only the valid bits (Fig. 2-1 Refs. 22, 24, & 41).

As to claim 25, Feldmeier and Chuang disclose the invention as claimed. Chuang further discloses a plurality of logic gates (Fig. 2).

As to claim 26, Feldmeier and Chuang disclose the invention as claimed. Feldmeier further discloses a table having a plurality of rows, each storing the priority of a corresponding array group (Fig. 3).

As to claim 48, Feldmeier and Chuang disclose the invention as claimed. Feldmeier further discloses a mask valid bit (Fig. 2-1 Ref. 24). Chuang further discloses generating a first portion of the NFA (Figs. 7 and 8).

*Allowable Subject Matter*

8. Claims 7-15, 27-28, 33-35, 37-38, 44-47, and 52-56 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached PTO-892.

10. a shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in **ABANDONMENT** of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).

11. Applicants are requested to number each line of each claim starting with line number one to provide easier communication in the future.

12. When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. § 1.111(c).

13. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

14. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Hong Kim whose telephone number is (703) 305-3835. The Examiner can normally be reached on the weekdays from 8:30 AM to 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Matt Kim, can be reached on (703) 305-3821.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

15. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to TC-2100:**

After-final (703) 746-7238

Official (703) 746-7239 (for formal communications intended for

entry)

Non-Official/Draft (703) 746-7240 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Application/Control Number: 09/829,355  
Art Unit: 2186

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Paper No. 7

**HONG CHONG KIM**  
**PRIMARY EXAMINER**

HK  
Primary Patent Examiner  
January 15, 2003

